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HNF-21106
Revision 1
Re-Issue

Waste Control Plan for the Low Level Fraction of the Retrievably Stored Waste in Burial Ground 218-W-4C

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Project Hanford Management Contractor for the
U.S. Department of Energy under Contract DE-AC06-96RL13200

Fluor Hanford
P.O. Box 1000
Richland, Washington

Approved for Public Release;
Further Dissemination Unlimited

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J. D. Aardal 1/5/2006
Release Approval Date

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H. Author/Requestor
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R.D. Greenwell
(Print and Sign)

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ADMINISTRATIVE DOCUMENT PROCESSING AND APPROVAL

Sheet 1 of 1

DOCUMENT TITLE:	OWNING ORGANIZATION/FACILITY:
WASTE CONTROL PLAN FOR THE LOW LEVEL FRACTION OF THE RETRIEVABLY STORED WASTE IN BURAIL GROUND 218-W-4C, REVISION 1, RE-ISSUE	WASTE RETRIEVAL PROJECT
Document Number: HNF-21106	Revision/Change Number: 1

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☐ Plan ☐ Report ☐ Study ☐ Description Document ☒ Other Waste Control Plan

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RESPONSIBLE CONTACTS

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DOCUMENT CONTROL

Does document contain scientific or technical information intended for public use? ☒ Yes ☐ No

Does document contain controlled-use information? ☐ Yes ☒ No

("Yes" requires information clearance review in accordance with HNF-PRO-184)

DOCUMENT REVISION SUMMARY

NOTE: Provide a brief description or summary of the changes for the document listed.

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REVIEWERS

Others

Name *(print)*	Organization

APPROVAL SIGNATURES

Author:		RELEASE / ISSUE
Name: (Print) J. F. Williams Jr	Date 1/4/06	JAN 05 2006 DATE: STA: 15 HANFORD RELEASE ID: 20
Responsible Manager:	4 Jan 06	
Name: (Print) J. E. Hyatt	Date	
Other:		
Name: (Print)	Date	

WASTE CONTROL PLAN

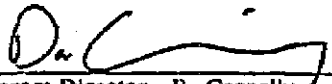
Work Scope Description – This Waste Control Plan (WCP) applies to the management of approximately 9,000 drums of low level, mixed low level and secondary waste generated as a result of suspect Transuranic waste retrieval operations in Low Level Burial Ground (LLBG) 218-W-4C as required by milestone M-91-40. Waste that is determined to be low level or mixed waste from retrieval operations will be staged in or near the process area and/or trench 33 in burial ground 218-W-4C and the Central Waste Complex waste storage buildings prior to treatment, if required, and disposal at the Environmental Restoration Disposal Facility.

List Constituents of Concern (COC) – ^{60}Co, ^{90}Sr, ^{137}Cs, ^{237}Np, ^{233}U, ^{234}U, ^{235}U ^{238}Pu, ^{239}Pu, ^{240}Pu, ^{241}Pu, ^{242}Pu, ^{241}Am, Arsenic, barium, cadmium, cadmium oxide, calcium oxide, carbon tetrachloride, chromium, chromium III, dipotassium dichromate, ethanolamine, hydroxylamine nitrate, lead, lead chromate, lead chromate oxide, lead dioxide, lead monoxide, mercury, mercuric oxide, potassium hydroxide, selenium, silver, silver chloride, soda lime, sodium carbonate, sodium hydroxide, 2,4-dinitrotoluene

Site Description – 218-W-4C Low Level Burial Ground, 200 West Area, United States Department of Energy, Hanford Site, Richland, WA, 99352

Reference – Data Quality Objectives (DQO) Summary Report for Disposition of the Low Level Fraction of Retrievably Stored Waste, HNF-20770, and Sampling and Analysis Plan for the Low Level Fraction of Retrievably Stored waste, HNF-21786
Rev. 0 **Date Approved:** DQO Report, 3/05, SAP 3/7/05

Preparer – D. Saueressig (FH)

Sign Name  **Date** 8/18/05

MLLW Program Director – R. Connolly
Waste Stabilization and Disposition Vice President – D. E. McKenney
TRU Retrieval Director – R. D. Greenwell
Environmental Protection Director – L. L. Fritz

Planned Drilling Start and Finish Dates – N/A

Waste Storage Facility ID Number – CWC – DOE/RL-91-17 and LLBG – DOE/RL-88-20

Field Screening Methods – Defined in the SAP.

Method	Frequency	Reference	Detection Range	Analyst

Laboratory Methods (Constituents of Concern) - Defined in the SAP.

Method	Frequency	Reference	Detection Range	Analyst

WASTE CONTROL PLAN	Page 2 of 2

Drill Site Coordinate Location – N/A

Waste Container Storage Area(s) Coordinate Location (s) – Waste generated from those activities described on page 1, "Work Scope Descriptions," will be stored and managed in the 200 West Area Low Level Burial Ground 218-W-4C and the Central Waste Complex.

Requirements for Soil Pile Sampling (if any) – N/A.

Non-regulated Material Disposal Location(s) – N/A

Sketch of Work Site – The waste will be stored in the storage areas identified at the locations shown in Figures 3 and 4 in the Waste Control Plan.

APPROVALS (Print / Sign Name and Date)

D. E. Einan (EPA) _____ Regulatory Agency Representative

R. D. Greenwell for RD Greenwell per Telecon 10/27/05 TRU Retrieval Director

M. S. McCormick DOE-RL _____ 10/27/05

D. E. McKenney _____ 10/27/05 WSD Vice President

R. R. Connolly _____ 10/27/05 Waste Services Project Director

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LIST OF FIGURES

LIST OF TERMS

CERCLA	*Comprehensive Environmental Response, Compensation, and Liability Act of 1980*
CWC	Central Waste Complex
DOE	U.S. Department of Energy
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
ERDF	Environmental Restoration Disposal Facility
LDR	land disposal restrictions
LLBG	low-level burial grounds
LLW	low-level waste
MLLW	mixed low-level waste
PEcoS	Pacific EcoSolutions, LLC
RCRA	*Resource Conservation and Recovery Act of 1976*
RSW	retrievably stored waste
TRU	transuranic
WAC	waste acceptance criteria

WASTE CONTROL PLAN FOR THE LOW-LEVEL FRACTION OF THE RETRIEVABLY STORED WASTE FROM BURIAL GROUND 218-W-4C

1.0 INTRODUCTION

Retrieval operations for suspect transuranic (TRU) waste are currently being conducted in Burial Ground 218-W-4C located in the 200 West Area at the U.S. Department of Energy (DOE) Hanford Site (see Figure 1). The waste retrieval project in the low-level burial grounds (LLBG) is proceeding in accordance with a settlement agreement among the U.S. Environmental Protection Agency (EPA); the Washington State Department of Ecology (Ecology); and the DOE, Richland Operations Office (Hanford Federal Facility Agreement and Consent Order Approved Change Form Number M-91-03-01 "Modification of Hanford Federal Facility Agreement and Consent Order M-91 Series Provisions").

The retrievably stored waste (RSW) at 218-W-4C falls into three categories: TRU waste, low-level waste (LLW), and mixed low-level waste (MLLW). Due to the potential threat of hazardous constituents being released to the environment, a time-critical removal action was initiated to accelerate the disposition of LLW and MLLW generated from the waste retrieval operations to lined disposal trenches at the Hanford Environmental Restoration Disposal Facility (ERDF) (*Comprehensive Environmental, Compensation and Liability Act (CERCLA) Time-Critical Removal Action Memorandum for Disposal at the Environmental Restoration Facility (ERDF) of Non-Transuranic (TRU) Waste Generated During the M-91 Retrieval Operations at Burial Ground 218-W-4C* [EPA 2004]). This removal action will be performed under authority of the *Comprehensive Environmental Response, Compensation, and Liability Act of 1980* (CERCLA).

The TRU waste retrieved from the LLBG is not included in the scope of this waste control plan. The purpose of this waste control plan is to describe the LLW and MLLW that will be retrieved from Burial Ground 218-W-4C, the physical location of the waste storage areas, and other requirements to safely manage these wastes prior to shipment to the ERDF for disposal. This plan also delineates where CERCLA waste management requirements apply to the LLW or MLLW.

2.0 DESCRIPTION OF WASTE STREAMS

Suspect TRU waste at Burial Ground 218-W-4C include such items as:

- Failed process equipment; e.g., pumps, resin columns, tanks
- Miscellaneous facility solid waste; e.g., paper, plastics, glassware, solidified liquids
- Decontamination and demolition debris
- Contaminated soils.

Of the estimated 18,000 suspect TRU waste containers at Burial Ground 218-W-4C, it is expected 50 percent will be LLW or MLLW. It is anticipated that 90 percent of the MLLW will meet the definition of debris waste under Washington Administrative Code 173-303-140 and 40 Code of Federal Regulations Part 268.2.

The following waste types from waste retrieval operations at Burial Ground 218-W-4C are included in the scope of this waste control plan:

- LLW fraction of the RSW contained in drums
- MLLW fraction of the RSW contained in drums
- Secondary wastes generated by waste retrieval operations; e.g., contaminated and potentially contaminated personal protective equipment, asphalt, wood, plastic, paper, metal, and soil.

The volumes of LLW and MLLW in other containers, such as boxes, or stored in other burial grounds (i.,e., 218-W-3A, 218-E-12B and 218-W-4B) are not covered by this Time Critical Removal Action. The disposition of this waste will be addressed by subsequent CERCLA actions.

3.0 WASTE GENERATION AND MANAGEMENT

The RSW and secondary wastes generated during the waste retrieval project will be managed in accordance with the Hanford Federal Facility Agreement and Consent Order M-91 milestones, state and federal regulations, and DOE requirements. In addition, the LLW and MLLW fraction of the RSW and associated secondary wastes will also be managed in accordance with the time-critical removal action memorandum (EPA 2004) and this waste control plan. A simplified process flow diagram for the removal action activities is provided in Figure 2. The LLW and MLLW will be managed and shipped for treatment and/or disposal from the following four locations at the 200 West Area:

- LLBG, 218-W-4C process area
- LLBG, 218-W-4C north of trench 4
- LLBG, 218-W-4C trench 33
- Central Waste Complex (CWC) waste storage buildings.

A CERCLA offsite determination per 40 CFR 300.440 has been requested and approved for offsite treatment prior to disposal at ERDF.

Burial Ground 218-W-4C Process Area

Suspect TRU waste containers are identified and inspected prior to removal from the trench face. Once removed from the retrieval trenches, the waste containers are transferred and staged in asphalt or gravel zones in a process area located in the 218-W-4C Burial Ground. A typical layout of a process area is provided in Figure 3. Segregated areas within the process area are set up based on nuclear and criticality safety requirements and are maintained in accordance with operating procedures. The configuration of the process area is subject to change.

In the process area the containers are inspected, labeled, and barcoded as appropriate. If characterization information indicate that a drum contains TRU waste, the container is classified as TRU and is staged in the process area for venting (if needed) and preparations for shipment to a storage or processing facility (e.g., CWC, Waste Receiving and Processing [WRAP]). These TRU waste containers will undergo nondestructive assay (NDA) at the WRAP Facility as part of the Waste Isolation Pilot Plant certification activities; it is anticipated that a small percentage of this TRU waste will be reclassified as LLW per the assay results. The newly reclassified LLW containers will be transferred for storage to the CWC and evaluated for disposal at the ERDF.

Suspect TRU waste containers requiring additional characterization information to classify as TRU are transferred to the process area for field NDA and venting (if needed). The waste containers that are determined to be LLW or MLLW are evaluated for the appropriate treatment and disposal pathway and are segregated accordingly in designated areas within the process area or other suitable locations in Burial Ground 218-W-4C.

Like the TRU waste containers, non-TRU containers (as determined by assay results and historical characterization information) are further designated pursuant to WAC 173-303-070 through 100. After dangerous waste designations are complete and the results identify the containers as LLW or MLLW, the waste containers are transferred from the assay or venting areas, as appropriate, to segregated staging areas in the process area.

Based on production needs, and after technical evaluations have been completed and it has been determined that the waste meets the waste acceptance criteria (WAC) of the receiving treatment and/or disposal facility (e.g., the ERDF), LLW/MLLW containers will be transferred to a CERCLA waste shipping area. LLW/MLLW containers in a CERCLA waste shipping area will be verified to meet all transportation requirements, and once approved by the ERDF or other treatment facility like Pacific EcoSolutions, LLC, the waste will be shipped to the appropriate facility for treatment and/or disposal. LLW/MLLW staged in CERCLA waste shipping areas and those shipped to the ERDF for disposal will be classified as CERCLA waste per the Time-Critical Removal Action memorandum (EPA 2004) and will be ultimately disposed of in lined trenches at the ERDF under CERCLA authority.

If it is determined during final shipment preparations that the LLW/MLLW containers do not meet transportation requirements or WAC for the ERDF or the commercial treatment facility, the LLW/MLLW waste will be transferred from the CERCLA waste shipping area to a LLW/MLLW staging area within the process area, or to a staging area for transfer to the CWC for further treatment and disposal evaluations.

CWC Waste Storage Building

The LLW/MLLW fraction of the RSW may also be transferred and stored at the CWC based on space and schedule constraints at 218-W-4C. Per Milestone M-91-40, the contact-handled RSW must be designated pursuant to WAC 173-303-070 through 100 within 90 days of retrieval. After technical evaluations have been made and it has been determined that the LLW/MLLW meets the ERDF or commercial treatment facility WAC, the LLW/MLLW will be transferred to a segregated CERCLA waste shipping area at the CWC and prepared for shipment directly to the appropriate treatment and/or disposal facility. Refer to Figure 4 for a map of the CWC and waste storage buildings. LLW/MLLW staged in CWC CERCLA waste shipping areas will be managed and shipped under CERCLA authority.

Secondary Waste Streams

Secondary waste will be generated during retrieval actions, including such items as contaminated and potentially contaminated personal protective clothing, asphalt, wood, plastic, paper, metal, soils, and other waste. The amount of secondary wastes generated during retrieval operations will be minimized to the extent possible.

Secondary waste could be staged in a process zone or other suitable location within the 218-W-4C Burial Ground. Alternatively, the secondary waste could be placed directly in accumulation containers (e.g., ERDF roll-off boxes, waste boxes and drums) in a CERCLA shipping area as it is generated. Secondary waste being accumulated in these containers will be inspected weekly to determine the adequacy of integrity, container marking/labeling, physical container placement and spill control. Containers showing signs of deterioration will be identified on the container inspection form and will be evaluated for repair, overpacked or repackaged. In the event of a spill or release, appropriate immediate actions will be taken to protect human health and the environment.

Secondary waste that meets or can be treated to meet Land Disposal Restriction (LDR) requirements (if mixed waste) and the ERDF WAC will be managed in CERCLA waste shipping areas at the 218-W-4C Burial Ground or CWC and prepared for shipment to the ERDF for disposal in lined trenches under CERCLA authority. Secondary waste streams that cannot be dispositioned to ERDF will be evaluated for alternative disposal pathways.

4.0 STORAGE/TREATMENT/DISPOSAL

LLW and MLLW will be staged at the LLBG in close proximity to the retrieval trenches, in trench 33, or at the CWC. Waste will be designated in accordance with the Settlement Agreement and pursuant to WAC 173-303-070 through 100.

LLW meeting the WAC for the ERDF (BHI-00139, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*) will be staged in CERCLA waste shipping areas at the 218-W-4C Burial Ground (e.g., process area, north of trench 4, trench 33) or CWC waste storage buildings. LLW containers in CERCLA waste shipping areas will be verified to meet all transportation requirements, and once approved by ERDF, the waste will be shipped to the ERDF for disposal in lined trenches under CERCLA authority per the time-critical removal action memorandum (EPA 2004).

In addition to meeting the ERDF WAC, MLLW must also comply with applicable LDRs under WAC 173-303-140 prior to disposal at the ERDF. Per WAC 173-303-140, Ecology incorporates by reference the federal regulations for LDRs in 40 CFR 268. It is expected that 90 percent of the MLLW will be debris as defined in 40 CFR 268.2(g). MLLW debris will be treated via macroencapsulation per the hazardous debris alternative treatment standards listed in Table 1 in 40 CFR 268.45. Treatment will occur at the ERDF or an offsite treatment facility in accordance with the EPA-approved Removal Action Work Plan (DOE/RL-2004-65). MLLW that meets the WAC for ERDF and the applicable LDRs will be shipped to the ERDF for disposal under CERCLA authority per the time-critical removal action memorandum (EPA 2004).

It is expected that 10 percent of the MLLW will not meet the definition of debris that is amenable to treatment per the alternative treatment standards in 40 CFR 268.45. This waste will be shipped to CWC and stored pending further evaluation for final treatment and disposal options. This disposition pathway will likely involve treatment to meet LDRs and the ERDF WAC. If it can be determined that the MLLW meets both the LDRs and the ERDF WAC, this waste will be staged in a CERCLA waste shipping area and prepared for shipment. Upon approval by the ERDF, it will be shipped for treatment and/or disposal as a CERCLA waste under CERCLA authority. MLLW waste that does not meet the ERDF WAC will be evaluated for alternative disposition pathways, including disposal in the MLLW trenches at the LLBG.

Secondary waste will be staged at the LLBG in close proximity to the retrieval trenches, in CERCLA shipping areas or at the CWC. Waste will be designated in accordance with WAC 173-303-070 through 100. Secondary waste that is determined to be LLW will be verified to meet all transportation requirements, and once approved by ERDF, the waste will be shipped to the ERDF for disposal in lined trenches under CERCLA authority per the time-critical removal action memorandum (EPA 2004). Secondary waste that is determined to be MLLW must comply with the applicable treatment standards in 40 CFR 268. Treatment, if necessary will occur at the ERDF or an offsite treatment facility in accordance with the approved Removal Action Work Plan (DOE/RL-2004-65). Secondary MLLW that meets the WAC for ERDF and the applicable LDRs will be shipped to the ERDF for disposal under CERCLA authority per the time-critical removal action memorandum (EPA 2004).

Waste will be transported in accordance with WAC 173-303, U.S. Department of Transportation, and/or DOE requirements as appropriate.

5.0 RECORDS

Documentation (e.g., NDA results, venting results/verification reports, acceptable knowledge documentation, waste designations, Uniform Hazardous Waste Manifests, Onsite Waste Tracking Forms) that is generated as a result of this removal action will be handled according to facility operating procedures. A solid waste information tracking system will be updated and records managed in accordance with established processes.

6.0 REFERENCES

40 CFR 268, "Land Disposal Restrictions," *Code of Federal Regulations*, as amended.

BHI-00139, 2002, *Environmental Restoration Disposal Facility Waste Acceptance Criteria*, Bechtel Hanford, Inc., Richland, Washington.

WAC 173-303, "Dangerous Waste Regulations," *Washington Administrative Code*, as amended.

EPA, 2004, *Comprehensive Environmental, Compensation and Liability Act (CERCLA) Time Critical Removal Action Memorandum for Disposal at the Environmental Restoration Facility (ERDF) of Non-Transuranic (TRU) Waste Generated During the M-91 Retrieval Operations at Burial Ground 218-W-4C*, U.S. Environmental Protection Agency, Region 10.

EPA, Ecology, and RL, 2004, (Hanford Federal Facility Agreement and Consent Order Approved Change Form Number M-91-03-01 "Modification of Hanford Federal Facility Agreement and Consent Order M-91 Series Provisions").

DOE/RL-2004-65, Revision 0, *Removal Action Work Plan for Disposition of Low-Level and Mixed Low-Level Waste From Burial Ground 218-W-4C*, U.S. Department of Energy, Richland Operations Office, Richland, Washington.

Comprehensive Environmental Response, Compensation, and Liability Act of 1980, 42 USC 9601 et seq.

Figure 1. Map of the 200 West Area Low-Level Burial Grounds.

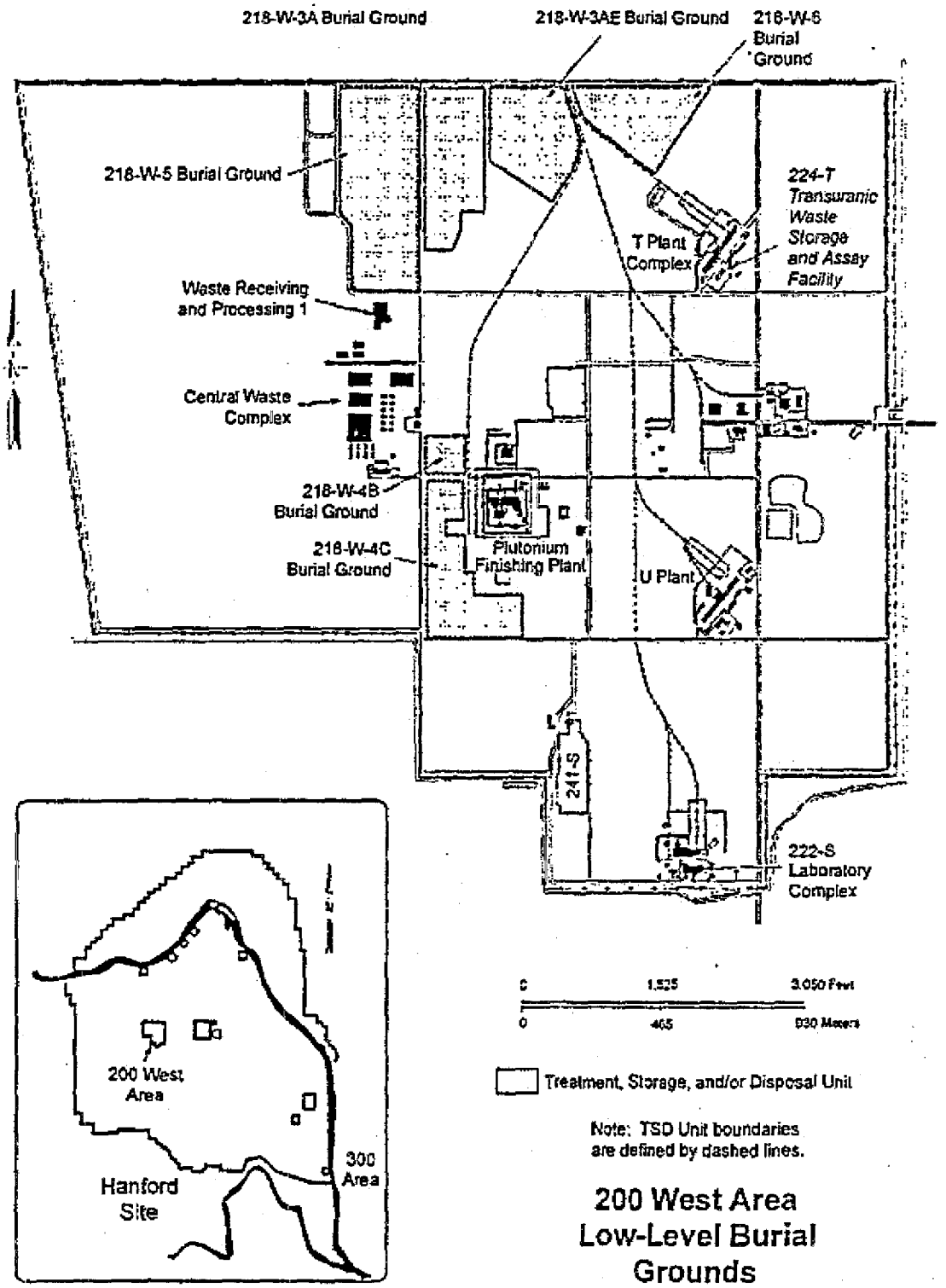

Figure 2. Process Flow Diagram for Retrievably Stored Waste Disposition.

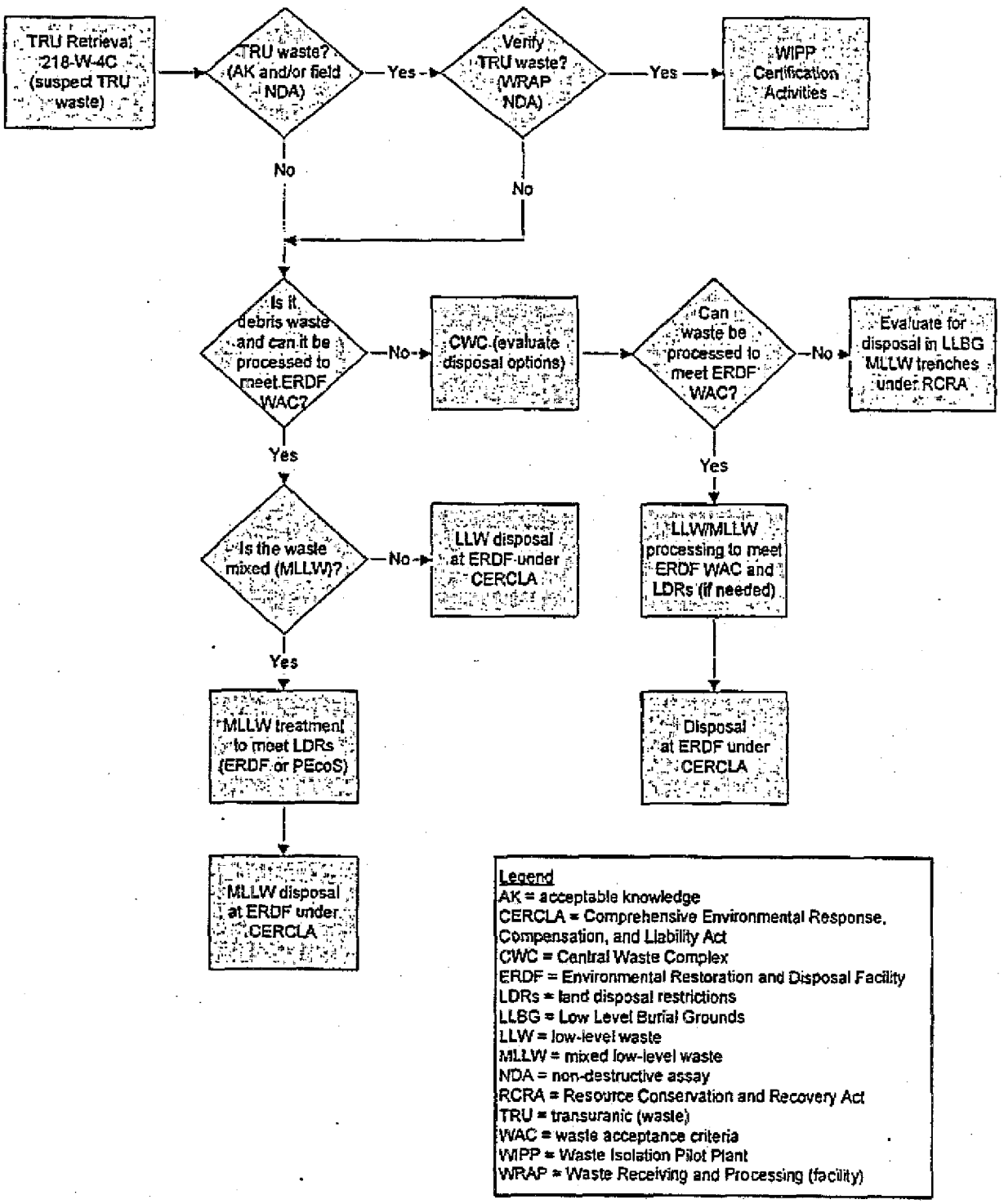

Figure 3. Typical Layout of the 218-W-4C Waste Retrieval Process Area.

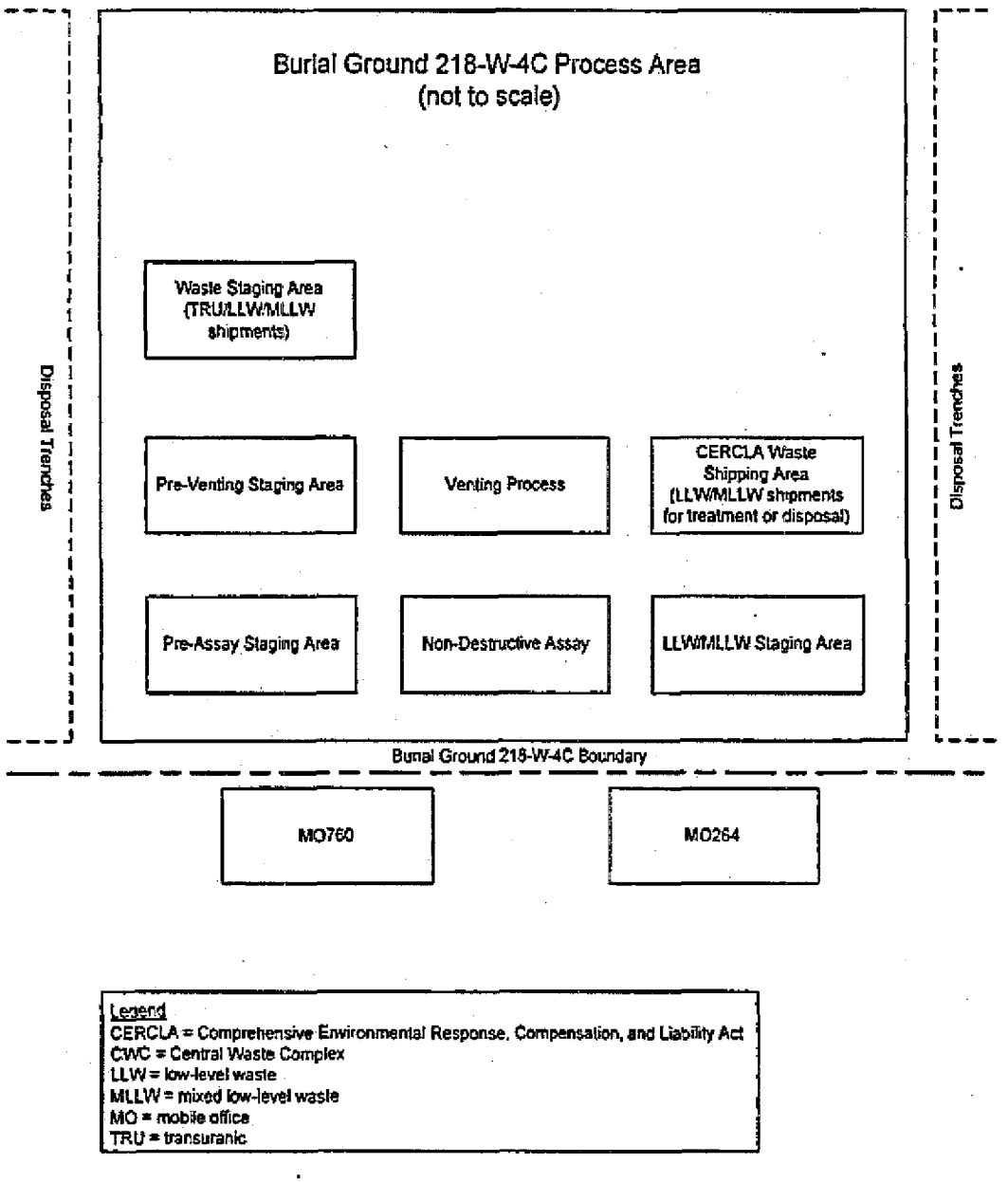

Figure 4. Map of the Central Waste Complex at the 200 West Area.